IEEE P802.11 Wireless LANs

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| Proposal of Relayed CCA mechanism |
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Abstract

This document proposes the Relayed CCA mechanism in TGbb.

History

R2: update the figure to better illustrate the channel access examples; update the terms according to the changes in subclause 4.3.

# 1. Relayed CCA

Due to the nature of light communications, the CCA mechanism may not work on non-AP LC STA side. The relayed CCA mechanism could work with the assistance of the AP. In general, the AP could detect the transmission from any non-AP LC STA as described in 32.3.2.3.5.2 CCA requirements. Then, the AP may disseminate the channel occupation information among the non-AP LC STAs within its coverage.

When the AP detects a transmission from a non-AP LC STA or transmissions from multiple non-AP LC STAs, it may repeat the received data. The repetition could be done at the analog level, i.e., the detected data is forwarded to both receiver physical layer and the lamp. The repetition would be a broadcast to all the non-AP LC STAs within its range, so that the non-AP LC STAs may be able to obtain the occupation status of the uplink channel from the assistance of the AP. Non-AP LC STAs that successfully detect the repetition by the AP would mark the medium ‘busy’ as in the CCA mechanism, except the sender(s) who are using the uplink channel.

When the AP has a packet to transmit, it starts the transmission of the new packet immediately after the repetition of the data from a non-AP LC STA.

Figure 1 illustrates an example of channel access with relayed CCA mechanism. The AP may retransmit data received from non-AP LC STAs on the downlink channel. Other non-AP LC STAs could mark the uplink channel as ‘busy’ in the CCA.indication in order to avoid the collisions on the uplink channel. The AP could switch from retransmission of received data to its own queue at the end of the repetition, as shown in the example of Packet 3 and 4’s switch.

Backoff

**AP**

**STA1**

**STA2**

Packet 1

Repetition

Packet 1

Backoff

Relayed CCA Busy

Packet 2

Repetition Packet 3

Relayed CCA Busy

Delay (ns)

Delay (ns)

Delay (ns)

Packet 3

Backoff

Backoff

Backoff

Packet 4

Figure 1 An example of channel access with relayed CCA mechanism